



SBR10U45SP5

10A SBR SUPER BARRIER RECTIFIER PowerDI5

Features

- Designed as Bypass Diodes for Solar Panels
- Selectively Rated for +200°C Maximum Junction Temperature for High Thermal Reliability
- Patented Super Barrier Rectifier Technology (SBR[®])
- High Forward Surge Capability
- Ultra Low Forward Voltage Drop
- Excellent High Temperature Stability
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- An Automotive-Compliant Part is Available Under Separate Datasheet (SBR10U45SP5Q)

Mechanical Data

- Case: PowerDI[®]5
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.093 grams (Approximate)



Ordering Information (Note 4)

Part Number	Case	Packaging
SBR10U45SP5-13	PowerDI5	5,000/Tape & Reel

Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.

2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.

3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information

PowerDI5



S10U45S = Product Type Marking Code D'' = Manufacturer's Code Marking K = Factory Designator YYWW = Date Code Marking YY = Last Two Digits of Year (ex: 17 for 2017) WW = Week Code (01 to 53)

SBR and PowerDI are registered trademarks of Diodes Incorporated.



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V _{RRM} Vrwm Vrm	45	V
RMS Reverse Voltage	V _{R(RMS)}	32	V
Average Rectified Output Current	lo	10	А
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	IFSM	275	A
Repetitive Peak Avalanche Power (1µs, +25°C)	PARM	30,000	W

Thermal Characteristics

Characteristic		Symbol	Value	Unit	
Thermal Resistance Junction to Ambient (Note 5) Thermal Resistance Junction to Ambient (Note 6)		R _{θJA} R _{θJA}	73 31	°C/W	
	V _R ≤ 80% V _{RRM}		-65 to +150		
Operating Temperature Range	V _R ≤ 50% V _{RRM}		≤180	°C	
	DC Forward Mode		≤200		
Storage Temperature Range		T _{STG}	-65 to +175	°C	

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

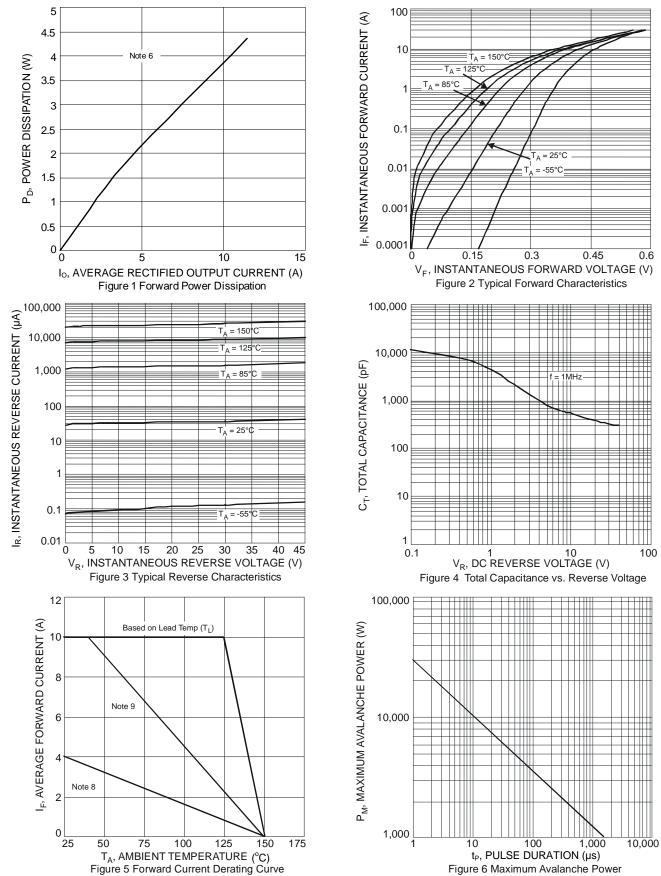
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	V _{(BR)R}	45	—	—	V	$I_R = 0.3 mA$
Forward Voltage Drop	VF	 	 0.42 0.38	0.42 0.47 0.41	V	I _F = 8A, T _J = +25°C I _F = 10A, T _J = +25°C I _F = 10A, T _J = +125°C
Leakage Current (Note 7)	IR		0.05 — 28.0	0.3 15 75	mA	$V_R = 45V, T_J = +25^{\circ}C$ $V_R = 45V, T_J = +100^{\circ}C$ $V_R = 45V, T_J = +150^{\circ}C$

Notes:

FR-4 PCB, 2oz. Copper. Minimum recommended pad layout per http://www.diodes.com/package-outlines.html.
 Polymide PCB, 2oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 14.4mm.
 Short duration pulse test used to minimize self-heating effect.



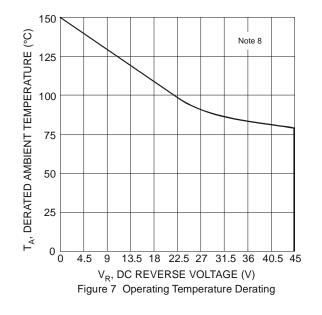
SBR10U45SP5



 Notes:
 8. Device mounted on FR-4 substrate, 2oz copper, with minimum recommended pad layout.

 9. Device mounted on FR-4 substrate, 2oz copper, with 10cm x 10cm pad layout.

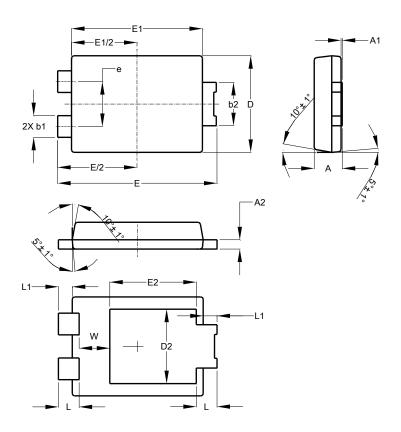






Package Outline Dimensions

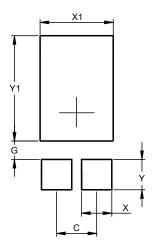
Please see http://www.diodes.com/package-outlines.html for the latest version.



	PowerDI5					
Dim	Min	Max	Тур			
Α	1.05	1.15	1.10			
A1	0.00	0.05				
A2	0.33	0.43	0.381			
b1	0.80	0.99	0.89			
b2	1.70	1.88	1.78			
D	3.90	4.05	3.966			
D2		-	3.054			
E	6.40	6.60	6.504			
е		-	1.84			
E1	5.30	5.45	5.37			
E2			3.549			
L	0.75	0.95	0.85			
L1	0.50	0.65	0.57			
W	1.10	1.41	1.255			
All Dimensions in mm						

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.



Dimensions	Value (in mm)
С	1.840
G	0.852
Х	1.390
X1	3.360
Ŷ	1.400
Y1	4.860



IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

- A. Life support devices or systems are devices or systems which:
 - 1. are intended to implant into the body, or
 - 2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.
- B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2017, Diodes Incorporated

www.diodes.com